

INFLUENCE OF MEDIATION AND THE PRESENCE OF AN  
OBSERVER ON THE NUMBER OF AGREEMENTS REACHED  
IN NEGOTIATION  
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Didier van den Hove

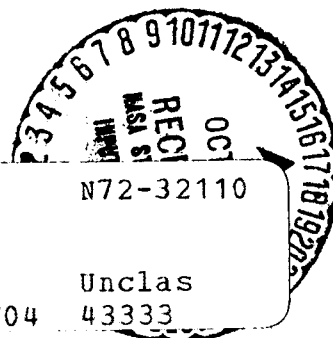
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INFLUENCE OF MEDIATION AND THE PRESENCE OF AN OBSERVER ON THE  
THE NUMBER OF AGREEMENTS REACHED IN NEGOTIATION\*

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This exploratory research studies in a laboratory setting the effects of 3 modes of negotiation-- bilateral, with mediation, and in the presence of an observer -- on the performance of 2 groups of subjects with different levels of cognitive complexity in two situations varying in the number and quality of logically possible agreement alternatives (contract zones) during six consecutive negotiating sessions.

The Hypotheses

1. Mediation is a form of negotiation in which a third party, considered to be neutral, intercedes in order to assist the parties in conflict to resolve their dispute. The intervention of this third party is optional in the sense that it is entirely up to the parties to accept the mediator or to refuse him, and if he is accepted, to then adopt or reject his suggestions. (Douglas, 1962, p. 4; Stevens, 1963, p. 125; Meynaud & Schröder, 1961, p. 3 and 4; Touzard, 1968, p. 92).

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\* This study forms a part of the doctoral dissertation entitled Study of two modes of social influence on the resolution of a conflict of interest: Mediation and observation. Preliminary experimental research. 2 vol. Louvain, UCL, Institute of

Taking the problem of mediation from the moment when it begins -- thereby neglecting the important problem of the processes that lead the parties to accept or to call in a mediator -- the questions that arise are the following: through what psychosocial process does mediation facilitate the resolution of a conflict? What does mediation add to the situation that isn't present in bilateral negotiations? (Deutsch, 1965 b, p.3).

One way of answering these questions consists of trying to determine what are the essential and general characteristics in every mediation procedure, in order to be able to reproduce in a laboratory setting, the structure inherent in the situation and to state the hypotheses in terms that are general enough that we are not tied to a particular situation. From the "gaming" viewpoint (Rapoport et al, 1965, p. 66), the problem is stated in terms of the structure of the situation rather than in terms of its content.

The usefulness of this approach rests more in the study of the general properties of the conflict, and in the analogic and overall understanding of a phenomenon that is too complex

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to be reproduced in the laboratory in its totality, than in the establishment of cause and effect relations applicable to a concrete situation. (Boulding, 1964, p. 75).

Within the limits thus defined, mediation has three characteristics that seem to be essential: (a) It is a transformation of the conflict dyad into a triad, and this structural transformation of the interactions has certain properties inherent in itself which would facilitate the resolution of the dispute(\*). (b) It is a new arrangement of communications which eliminates misunderstandings, acts on the respective expectations of the parties and introduces new variables into the situation, favoring the restructuring of perceptions and the opening of new prospects for solution.(\*\*) (c) Through the set of suggestions, it gives the negotiations the character of "tacit negotiations", which results in spotlighting the salient characteristics of the situation around which the discussion and the agreement can crystalize. (\*\*\*) (\*\*\*\*).

The first hypothesis concerns the structural transformation of the interactions in the mediation. Given that the three parameters of the mediation are difficult to dissociate, the

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(\*) Cf. Aubert, 1963 & 1967; Simmel, 1950; Peters, 1952.

(\*\*) Cf. Pruitt, 1965; Rapoport, 1960; Deutsch, 1965 (a); Walder, 1958; Walton & McKersie, 1965.

(\*\*\*) Cf. Schelling, 1960; Boulding, 1962; Stevens, 1963.

(\*\*\*\*) Cf. Van den Hove, 1968, for a detailed theoretical analysis of mediation and observation.

hypothesis will bear upon mediation wherein the triadic structure aspect of the interactions is accentuated by reducing the weight of the other aspects -- communication and tacit negotiation -- without, however, eliminating them altogether.

It is hypothesized that such mediation will increase the number of agreements reached by the parties compared to the number of agreements reached in a bilateral negotiation (Hypothesis 1).

2. If the transformation of the structure of the interactions is an important aspect of mediation, the question then arises whether the presence of an observer at the bargaining table constitutes an analogous transformation of the situation. In other words, can it be that the mere presence of a third party is in itself sufficient to facilitate the resolution of a conflict? (Rehmus, 1965).

Conversely, with reference to the theory of social facilitation and to the research by Zajonc (1965 & 1966), Zajonc & Sales (1966), Shapiro & Leiderman (1967), Davis et al. (1968), etc., is it necessary to equate the effect of the presence of an observer to an audience effect? However, the negotiation situation is in no way similar to those used in research on

social facilitation, since negotiation is a situation of interactions, therefore, already a social situation, where the presence of an observer introduces an additional social dimension. It is therefore no longer a matter of comparing the performance of an isolated individual with that of an individual in the presence of others, but rather of comparing the interdependent performances of two individuals in a conflict situation with what they display in the presence of a third person. As defined by Zajonc and by others (Wyffels et al., 1967), the social facilitation phenomenon includes this situation, but as far as we know no research has been done on it in this context.

The second hypothesis bears on the effect of social facilitation in negotiations: the mere presence of an observer hinders the conflict resolution process and thus reduces the number of agreements reached in comparison with bilateral negotiation and with mediation (Hypothesis 2).

A study by Rasmussen (1939), discussed by Zajonc (1966, p. 25), shows that the effect of the presence of another rat tends to diminish with time. This is confirmed for human subjects by a study by Ganzer (1968). These studies permit us to present another hypothesis which deals with the reduction in the effect

of the presence of the observer during the course of successive negotiating sessions: the number of agreements reached would tend to become equal to the number of agreements reached in a bilateral negotiation (Hypothesis II).

3. An important aspect of every negotiation is that of "contract zones" (Stevens, 1963, p. 127-142; Walton & McKersie, 1965, p. 13-45). When a clear contract zone exists, it is generally recognized that mediation is especially difficult (Kerr, 1954, p. 239). There would thus seem to be a relationship between the effectiveness of mediation and the size of the contract zone as well as the quality of the agreements that it allows. Based on the literature in this area, one may make the following hypotheses:

--The larger the contract zone and the more the agreements it contains involve the parties' interests, the less effective will be the mediation (Hypothesis 3);

--In negotiations with mediation, the number of agreements reached will not be very different from the number reached in bilateral negotiations having the same large and favorable contract zone (Hypothesis 4);

--Conversely, the number of agreements reached will be greater in mediation than in bilateral negotiation when the contract zone is narrower and less favorable (Hypothesis 5).

4. Given, on the one hand, the importance of perception and cognition in the process of conflict resolution, and on the other hand, the act of mediation which bears mainly on the perceptions of the parties and the restructuring of these, two questions arise. Do the individual cognitive characteristics affect the process of conflict resolution? Do mediation and the presence of an observer have a differential effect on negotiators of differing cognitive characteristics?

The notion of "cognitive complexity" refers to the manner in which an individual receives, stores, processes and transmits information (Schroder, Driver & Streufer, 1967, p. 8), i.e. to the conceptual structures characterizing the relationship between an individual and his environment. An individual is said to be cognitively simple (concrete) if his perception is unidimensional and hierarchically organized according to a rigid principle; his perception is in all-or-nothing, black-and-white terms. An individual is said to be cognitively complex (abstract) if his perception is multidimensional and if it is organized as a function of flexible and varied principles; this individual is capable of nuances and of adopting different points of view on the same reality.

The theory of cognitive complexity allows us to propose hypotheses concerning the behavior of simple and complex



subjects in different negotiation situations(\*):  
--In bilateral negotiations, cognitively complex individuals will reach more agreements than cognitively simple ones (Hypothesis 6);

--If mediation does not introduce important complementary information, complex individuals will show performances that are rather similar to those they would have in bilateral negotiations (Hypothesis 7);

--Conversely, in the same conditions, mediation will improve the performance of simple individuals (Hypothesis 8);

-- The effect of the presence of an observer will be a function of the general stimulation level produced. If this level is high, it will be identical for the two groups of persons; if it is low, the effect will be more pronounced for the simple individuals (Hypothesis 9).

5. Finally, negotiation is not a unique phenomenon in time, but rather consists generally of a succession of sessions which influence one another. Stevens calls this phenomenon the "game sequence" aspect of negotiations and emphasizes its importance for the understanding of the negotiation process (1963, p. 47-55).

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\* Cf. Harvey, Hunt & Schroder (1961); Fiske & Maddi (1961); Schroder, Driver & Streufert (1967).

On the basis of the "blocking effect" and the learning conditions evidenced by the numerous studies utilizing the "Prisoner's Dilemma" (Willis & Joseph, 1959; Rapoport, 1963; Pilisuk et al., 1965; Terhune, 1968), one can make the following hypotheses:

--In bilateral negotiations where sessions are of the same structure, the blocking effect is probable. The individuals who have reached an agreement in the first sessions will tend to repeat these agreements in the following sessions, whereas those who have failed in the first session have less chance of succeeding in the following sessions (Hypothesis 10);

--Mediation probably increases the number of agreements during successive sessions, i.e. it favors learning (Hypothesis 12);

--Abstract subjects are more amenable to learning given their greater conceptual flexibility and their greater tolerance for ambiguity (Hypothesis 13).

#### The Experimental Procedures (\*)

The experiment was conducted at the Behavioral Science Laboratory of Purdue University between March and November 1967. The subjects were 120 American student volunteers interested in making between \$1.50 and \$4.00 by participating in a negotiating experiment.

The experiment consisted of a 30 minute pre-test during which mainly the "impression formation test" was given (\*\*), the results of which allowed the setting up of subject pairs,

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(\*) The detailed experimental procedures (equipment, instructions, pre and post-experiment questionnaires, construction principles for the price and profit scales, statistical models, significance test calculations, etc. are described in Van den Hove, 1968.

(\*\*) Cf. Schroder et al, 1967.

matched for their level of cognitive complexity. These subject pairs were then called for the experiment proper, which lasted about 90 minutes.

1. The task:

The task for a pair of subjects consisted of negotiating the price for a fictitious product, i.e., reaching an agreement on the price that would bring them, as individuals, the greatest possible profit. It involved bargaining between a seller and a buyer in a situation of "bilateral monopoly (\*)."

Each subject had in front of him a price scale with a profit scale parallel to it. This indicated that, if an agreement was reached at a given price, it would give the subject the profit corresponding to this price. The subjects did not know the profit scale of their partners and communication between them was limited to the sending of written messages which could contain only a price. This price constituted an agreement proposal, and the exchange of these proposals continued either until the moment an agreement was reached or until the time allowed for the negotiating session had elapsed (about ten minutes).

The conflict of interest arose from the fact that the profit scales were diametrically opposite. The common interest was created by the fact that in the case of non-agreement the two partners lost ten cents per session. The subjects therefore had an interest in accepting every agreement proposal that won them a "profit" equal to or greater than 10¢. This coexistence of opposite and common interests characterizes the structure of most social conflicts ("mixed-motive conflict").

In the event of agreement, the profits realized were added to the \$2.00 credit which the subjects received at the beginning of the experiment as compensation for their participation. In the case of disagreement, the 10¢ was deducted from their credit (non-agreement cost).

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(\*) Cf. Siegel & Fouraker, 1960, and Fouraker & Siegel, 1963.

## 2. The independent variables:

The study entails four independent variables in a four factor experimental design, with measurements repeated on the last factor (3 x 2 x 2 x 6) (\*).

### Factor A: The Three Modes of Negotiation

Factor A is composed of the three modes of negotiation: bilateral negotiation ( $A_1$ ), mediation ( $A_2$ ) and observation ( $A_3$ ). All three are characterized by a conflict situation with limited communications where the subjects are visually isolated from each other. In bilateral negotiation, each session took place strictly between the two partners with no outside intervention, except for the interventions of the experimenter between each session. This factor A level is in a sense the control group against which the performances of the groups at the two other levels are to be compared.

Mediation differs from the control group by the presence of a mediator visible to the two partners, by the fact that he passes and records the offers, and by his proposals for agreements. In the instructions, the mediator was explicitly presented as a mediator and his role was explained to the subjects. Beyond this, the conditions here are exactly the same as the preceding ones, except, of course, for the material modifications necessitated by the introduction of a third person. The structure of the interactions is thus modified, in the sense that the exchanges pass through the mediator and the proposals of the mediator constitute an additional interaction.

The mediator made two proposals for agreement in the form of written messages. The first took place after five minutes of negotiations and consisted of proposing the price that would provide the partners with an equal profit, i.e., the

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(\*) Cf. Winer, 1962

price that divides the joint payoff into equal differential payoffs. The second proposal took place after eight minutes of negotiations and proposed the price situated halfway between the two current positions of the partners.

The mediator role was played by an "accomplice" of the experimenter, a student paid to perform this task. This person was introduced to the subjects as another subject whose task was to help them reach an agreement and to make proposals which he considered the best on the basis of the observed exchanges of offers. The subjects thus were unaware of the fact that the mediator knew their profit scales.

The intention behind the design of this mediation procedure, which may seem rather arbitrary and a bit simplistic, was to minimize the direct influence of the mediator so as to bring out as much as possible the transformation in the structure of the interactions. The mediator's first proposal introduced, usually without the subject's knowing it, valuable strategic information, but did not take into account the force relations between the partners; the second proposal, however, did take account of these force relations, sometimes contradicted the first proposal and favored one or the other of the partners. The subjects thus were kept in a certain degree of uncertainty and could always refer to the first or the second proposal in making their strategic decisions. It was also necessary that there not be too great a contribution of non-ambiguous information in comparison to the small amount of information available in the other conditions.

The objectives of this mediation procedure seem to have been attained, in view of the fact that the subjects never questioned the mediator's role, neither before nor after the experiment, and that some of the subjects accepted his suggestions while others ignored them. This seems to indicate that, as the instructions stressed they should, they felt free with respect to the mediator.

The negotiations with observation were strictly similar to the mediation type, except that the observer did not make agreement suggestions and that in the instructions he was introduced as an observer whose function consisted in passing and recording the partners' offers. The observer role was played by the same "accomplices" who played the role of mediator.

#### Factor B: The Contract Zones

This variable is made operational by the creation of two contract zones which vary both as to the number and as to the money amount of the agreements ("differential payoff") that are rationally possible.

The extent of the objective contract zone is determined by the cost of non-agreement and the "joint payoff," i.e., the total sum of profits to be shared by the partners. The cost of non-agreement is 10¢ in each of the two zones, and the joint payoff is equal to 0 in  $B_1$  (zone with five agreement alternatives) and to 20¢ in  $B_2$  (zone with nine agreement alternatives). The equilibrium point equally dividing the total sum of profits is 0 in  $B_1$  and 10¢ in  $B_2$ . The different agreement alternatives in each of the two contract zones are given in Table I.

Even though the objective contract zone is thus determined, nothing prevents one subject from accepting a contract that entails a greater loss for him than he would undergo in the event of non-agreement. The subjective contract zone can thus be different. A person does not, in fact, always act rationally (or acts with a different logic); the scale of subjective or psychological agreement utilities for a given person may have nothing in common with the possible monetary cost of this agreement. Concretely, an individual can value cooperation and agreement to the point that he will accept an agreement that will cost him 25¢ rather than endure the tension created by the non-agreement that will only cost him 10¢.

Or else a subject may accept a contract that costs him more than 10¢ in the hope that his partner will make the same gesture in the following session.

The reason for providing the cost of non-agreement with a negative value in the experiment is by analogy to the numerous social conflicts where non-agreement implies a cost for the parties. The situation would, in fact, be different if the choice for the parties was between a profitable agreement and the absence of an agreement the result of which was merely to not give them any profit. One might suppose that the threat of a negative cost for non-agreement results in different behavior and favors the conclusion of agreements. However, that does not seem to be the case, either in a certain number of social conflicts or in laboratory conflicts. Certain subjects try above all to maximize their gains--which often causes them to lose everything--instead of minimizing their losses. Other subjects prefer to incur the costs of successive non-agreements because they are then sure that their partners will endure the same losses, rather than accept an agreement which, although profitable for themselves, might be more so for their partner.

#### Factor C: Cognitive Complexity

The cognitive complexity levels of the subjects were measured by the Impression Formation Test described in the work of Schröder et al. (1967) and elsewhere by Streufert and Driver (1967). This test, which measures the complexity of social perceptions, presents the subject with a set of incongruous adjectives which serve as stimuli for the formation of his impressions. He is asked to describe a person who would possess these characteristics (Asch 1946).

The response scoring principle consists of a set of rules for inferring the level of conceptual structure that produces the response. "In inferring structural properties from verbal responses, the manual directs the rater to consider the

degree of differentiation and the number of degrees of freedom in the rules of integration in the mediating processes underlying the responses (Schröder et al, 1967, p. 186)."

The responses are rated on a seven-point scale (1 - 7), to which has been added, in the present study, an additional level (0), characterizing a subject who does not integrate the material presented or who can not conceive of a person existing who could have these qualities. In the two cases, a refusal of the conflict or incongruity is involved.

The measure of conceptual structure is obviously rather subjective. It is rather rudimentary and certainly unsatisfactory for a fine discrimination between two rather similar structures. No more objective measure exists yet. Although this measure is imperfect, we must however note the agreement among judgements made by different judges ( $r \geq .85$ ).

The median was taken as the criterion for setting up the groups of cognitively complex ( $C_1$ ) or cognitively simple ( $C_2$ ) subjects. This was situated between 2 and 2.5. A subject having a score of 2.5 was thus considered as a complex subject, although generally we consider that conceptual complexity only appears with a score equal to or greater than three. Also, the majority of studies using two groups of subjects only include in these groups those subjects located at the extremities of the complexity scale, thus rejecting the intermediate group of subjects. This procedure has not been usable here due to the difficulty in finding subjects with a score above three and the large number of subjects needed for the experiment. (\*) It would therefore not be surprising to find only small differences between the two groups. Moreover, a certain caution will be necessary if one wishes to compare

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(\*) The original experimental design included three additional contract zones, requiring 300 subjects. In view of the difficulty of obtaining cognitively complex subjects, five experimental groups could not be formed. The partial results dealing with the 14 other experimental groups will be reported at a later date.



the results of this research with that of other studies utilizing the extreme groups. The average levels of cognitive complexity of the 12 experimental groups are given in Table II.

ZONE B <sub>1</sub>		ZONE B <sub>2</sub>	
Subject Sujet 1	Sujet 2	Sujet 1	Sujet 2
		40	-20
		35	-15
		30	-10
		25	-5
		20	0
		15	5
		10	10
		5	15
		0	20
		-5	25
		-10	30
		-15	35
		-20	40

TABLE I

Profits (in cents) gained by the various agreement alternatives in each of the two contract zones.

		A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>
B <sub>1</sub>	C <sub>1</sub>	3,15	3,30	3,20
	C <sub>2</sub>	1,25	1,70	1,45
B <sub>2</sub>	C <sub>1</sub>	3,05	3,10	3,00
	C <sub>2</sub>	1,35	1,45	1,45

TABLE II

The mean levels of cognitive complexity of the 12 experimental groups.

#### Factor D: The Temporal Sequence of the Negotiating Sessions

Factor D has six levels and is composed of the six negotiating sessions in which a given pair of subjects participate. The contract zone was the same in the six sessions.

#### 3. The dependent variables:

The number of agreements reached per session is the principal dependent variable. Since this measure supplies no indication of the quality of the non-agreements, another measure, called the "end difference," was constructed. It is the distance in profit terms which separates the final positions of the partners at the end of the bargaining. This distance is equal to zero in the case of agreement; it can be more or less large in case of non-agreement. This measure is more sensitive than the number of agreements, since it takes account of the size of the non-agreements (\*). It will be used in the analysis when it supplies complementary data to that furnished by the number of agreements reached.

#### 4. Operational definition of the hypotheses:

Hypothesis 1: The mean number of agreements reached per session is larger with mediation than with bilateral negotiation:  $\bar{A}_2 > \bar{A}_1$ .

Hypothesis 2: The mean number of agreements is lower with observation than in the other two conditions:  $\bar{A}_1 > \bar{A}_3$  and  $\bar{A}_2 > \bar{A}_3$ .

Hypothesis 3: The mean of agreements reached with mediation is larger in the less favorable contract zone than in the more favorable contract zone:  $\bar{A}_2(B_1) > \bar{A}_2(B_2)$ .

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(\*) The formula for calculation is :  $DF = P_1 + P_2 - J$ , where DF is the end difference,  $P_1$  the profit corresponding to the last offer by subject 1;  $P_2$  the profit corresponding to the last offer by subject 2; and J the total amount of the sharable profits, or "joint payoff." (0 in  $B_1$ , 20 in  $B_2$ ).

Hypothesis 4: Mediation does not increase the mean number of agreements in the more favorable contract zone:  $\bar{A}_1(B_2) = \bar{A}_2(B_2)$ .

Hypothesis 5: Mediation increases the mean number of agreements in the less favorable contract zone:  $\bar{A}_2(B_1) > \bar{A}_1(B_1)$ .

Hypothesis 6: The mean agreements reached by complex subjects with bilateral negotiation is greater than that with simple subjects:  $\bar{A}_1(C_1) > \bar{A}_1(C_2)$ .

Hypothesis 7: Mediation does not increase the mean number of agreements reached by the complex subjects:  $\bar{A}_2(C_1) = \bar{A}_1(C_1)$ .

Hypothesis 8: Mediation increases the mean agreements reached by the simple subjects:  $\bar{A}_2(C_2) > \bar{A}_1(C_2)$ .

Hypothesis 9: The mean agreements reached by the complex subjects with observation is equal to or greater than that for simple subjects:  $\bar{A}_3(C_1) \geq \bar{A}_3(C_2)$ .

Hypothesis 10: In bilateral negotiation it is probable that no learning will take place during the course of the sessions:  $\bar{D}_1(A_1) = \bar{D}_2(A_1) = \dots = \bar{D}_6(A_1)$ .

Hypothesis 11: With observation, the mean of agreements reached increases through the sessions:  $\bar{D}_6(A_3) > \bar{D}_5(A_3) > \dots > \bar{D}_1(A_3)$ .

Hypothesis 12: With mediation it is probable that the mean number of agreements will increase through the sessions:  $\bar{D}_6(A_2) > \bar{D}_5(A_2) > \dots > \bar{D}_1(A_2)$ .

Hypothesis 13: The increase in the mean of agreements reached during the course of the sessions will probably be more pronounced with the complex subjects than with the simple subjects:  $\bar{D}_1(C_1) > \bar{D}_1(C_2)$ .

### The Results

The general mean number of agreements reached per session is

.564 (\*). Table III shows the means for each level of the various factors. One will note that the number of agreements reached in each of the two contract zones is about the same.

$\bar{A}_1 = .642$	$B_1 = .522$	$\bar{C}_1 = .560$	$D_1 = .550$	$\bar{D}_1 = .550$
$\bar{A}_2 = .683$	$B_2 = .606$	$\bar{C}_2 = .567$	$D_2 = .617$	$\bar{D}_2 = .567$
$\bar{A}_3 = .367$			$D_3 = .533$	$\bar{D}_3 = .567$

TABLE III

Mean numbers of agreements reached per session for each level of the four factors.

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(\*) .564 is the average number of agreements reached per session and per pair of subjects. This number is, in fact, a proportion because the variable "agreements" can take only one of two values: zero or one. This mean is obtained by dividing the total number of agreements reached by ( $n \times i \times j \times k \times l$ ) i.e., 360, which is the maximum number of agreements theoretically possible in the experimental design.

The analysis of variance (Table IV) shows that Factor A is significant at the  $p < .01$  level  $\{F = 6.89; F_{.99}(2; 48) = 5.08\}$  (\*). The number of agreements is slightly higher with

(A) SOURCES DE VARIATION	(B) df	(C) C.M.	F
(D) Entre sujets:			
A (modes de négociation)	2	3,553	6,89***
B (zones de contrats)	1	0,625	
C (complexité cognitive)	1	0,003	
AB	2	0,738	2,38 (n.s.)
AC	2	0,086	
BC	1	1,225	
ABC	2	0,158	
Erreur (entre)	48	0,515	
(E) Intra sujets			
D (séquences des sessions)	5	0,049	2,64*
AD	10	0,133	
BD	5	0,365	
CD	5	0,049	
ABD	10	0,278	
ACD	10	0,073	1,55 (n.s.)
BCD	5	0,258	
ABCD	10	0,152	
Erreur (intra)	240	0,179	

\*\*\*  $p < .01$   
 \*\*  $p < .05$   
 \*  $p < .10$   
 (F) n.s. : non significatif

**KEY**

(A) Sources of variation (B) df (C) MS

(D) Between subjects:  
 A (negotiation modes)  
 B (contract zones)  
 C (cognitive complexity)  
 AB  
 AC  
 BC  
 ABC  
 Error (between)

(E) Within subjects:  
 D (sequences of sessions)  
 AD  
 BD  
 .  
 .  
 .  
 ABCD  
 Error (within)

(F) n. s.: not significant

TABLE IV

Analysis of variance for number of agreements.

mediation (.683) than with bilateral negotiation (.642) and decidedly lower with observation (.367). The  $\bar{A}_1 - \bar{A}_3$

(\*) The symbolism used in the analyses of variance and the significance tests is that of J. B. Winer (1962).

difference is significant at the  $p < .05$  level  $\{q = 4.19; q_{.95}(3; 48) = 3.42\}$  (\*) and the  $\bar{A}_2 - \bar{A}_3$  difference is significant at the  $p < .01$  level  $\{q = 4.82; q_{.99}(3; 48) = 4.35\}$ . The  $\bar{A}_2 - \bar{A}_1$  difference apparently is not significant.

Hypothesis 1 ( $\bar{A}_2 > \bar{A}_1$ ) is thus rejected. However, the trend goes in the predicted direction, and in comparison with bilateral negotiation, mediation at least does not worsen the relationship between the partners.

Hypothesis 2 ( $\bar{A}_1 > \bar{A}_3; \bar{A}_2 > \bar{A}_3$ ) is confirmed. Observation reduces the number of agreements reached very noticeably.

Since mediation and observation constitute two modes of introducing a third party into a negotiation, we are justified in saying that, compared to observation, mediation has a very positive effect on the number of agreements.

The analysis of variance shows again that only the BD interaction effect is significant at  $p < .10$   $\{F=2.04; F_{.90}(5; 240)=1.88\}$ . It should be noted that the BC interaction effect is not far from significance at  $p=.10$   $\{F=2.38; F_{.90}(1; 48)=2.81\}$ . Given the weakness in the manipulation of Factor C (discussed above) and the hypotheses relative to this factor, those simple effects involving this factor will be taken into consideration in the analysis.

Hypothesis 3 ( $\bar{A}_2(B_1) > \bar{A}_2(B_2)$ ) is not confirmed. The respective means are .600 and .765. The difference is not significant  $\{F=1.58; F_{.90}(1; 48)=2.81\}$  and the trend goes in the direction opposite to that predicted. The claim by C. Kerr, discussed above, is therefore not verified within the framework of this experiment.

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(\*) The "q" test (Tukey (a) Method; cf. Winer, 1962 p.87) is a strict test compared to the corresponding F-test or t-test. For example, for a given  $q=3.41\{q_{.95}(3; 48)=3.42\}$ ,  $F=5.83\{F_{.95}(1; 48)=4.08\}$  and  $t=2.42\{t_{.99}(48)=2.42\}$ .

Hypothesis 4  $\{\bar{A}_1(B_2) = \bar{A}_2(B_2)\}$  is confirmed. There does not, in fact, exist any significant difference between these two means (.735 and .765). But since Hypothesis 5  $\{\bar{A}_2(B_1) > \bar{A}_1(B_1)\}$  is rejected--the difference between the two means is not significant (.600 and .550)--the confirmation of Hypothesis 4 is very much weakened. As Figure 1 shows, mediation, compared to bilateral negotiation, has no more effect in one of the contract zones than in the other. In both it only brings about a weak increase in the number of agreements reached. However, the fact that the trend is the same in both contract zones increases the probability that mediation has a weak positive effect.

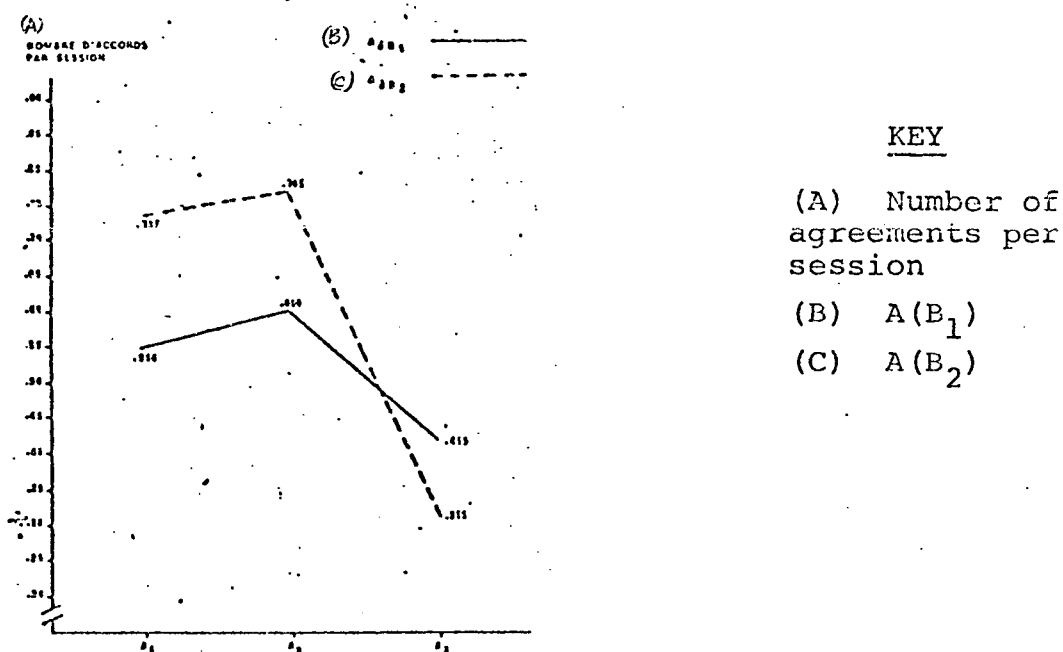


Figure 1 Numbers of agreements. Effects of Factor A at two levels of Factor B.

As for observation, Figure 1 shows that it reduces the number of agreements more in the contract zone with nine alternatives (.765 and .315) than in the one with five alternatives (.600 and .415). The simple  $A(B_1)$  effect is not significant at  $p < .10$  ( $F=1.0$ ). On the other hand, the simple  $A(B_2)$  effect

is significant, at  $p < .01$   $\{F=7.17; F_{.99}(2; 48)=5.08\}$ . At level  $B_1$  no difference between means is significant, whereas at level  $B_2$  the differences  $\bar{A}_2 - \bar{A}_3 (.765 - .315)$  and  $\bar{A}_1 - \bar{A}_3 (.725 - .315)$  are significant at  $p < .01$   $\{q=4.86$  and  $q=4.54; q_{.99}(3; 48)=4.35\}$ .

Factor A therefore does not have any significant effect in the less favorable contract zone, even though the trend is the same as that observed in the more favorable contract zone, where Factor A has a very significant effect. If, thus, the principal effect of Factor A is significant at  $p < .01$ , it owes this mainly to the nine-alternative contract zone and the condition of negotiation with observer.

Following from the preceding analysis and in view of the fact that the BC interaction approaches the level of significance, the question arises whether the negotiating conditions affect the complex and the simple subjects equally in each of the contract zones. But before attacking this question, it is worthwhile to examine the BC interaction, illustrated in Figure 2.

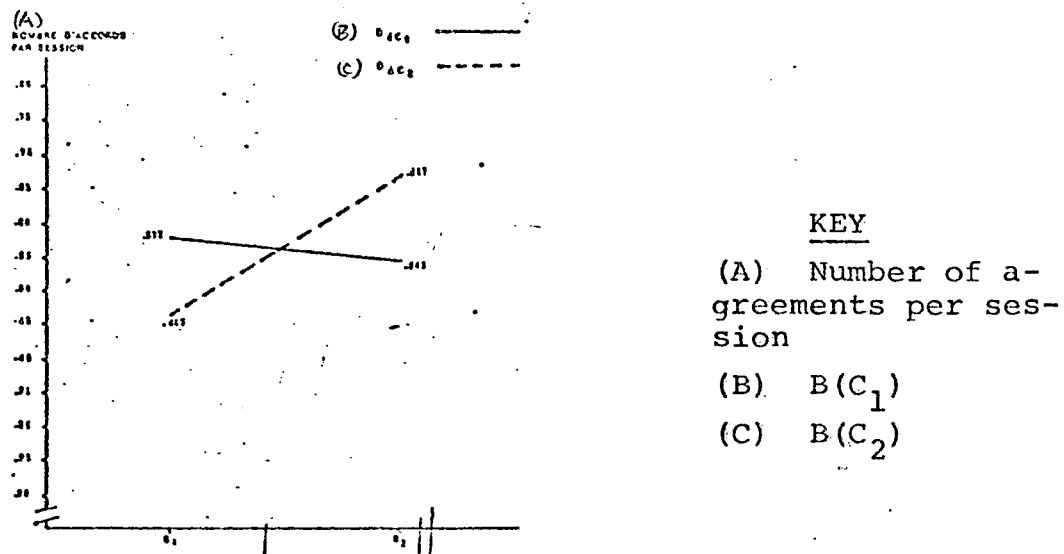


Figure 2 Numbers of agreements. Effects of Factor B at two levels of Factor C.



Complex subjects reach a nearly equal number of agreements in both contract zones (.577 and .543)  $\{F < 1\}$ . Simple subjects, however, reach many more agreements in the nine-alternative contract zone than in the one with five alternatives (.667 in  $B_2$  and .467 in  $B_1$ ). The simple  $B(C_2)$  effect is significant at  $p < .10$   $\{F = 3.50; F_{.90}(1; 48) = 2.81\}$ . Although the two converse simple effects  $C(B_1)$  are not significant ( $F = 1.05$  and  $F = 1.35$ ), it nevertheless appears that the simple subjects have a tendency to conclude fewer agreements than the complex subjects in the five-alternative contract zone but more in the nine-alternative zone.

Returning to the question raised earlier, Figure 3 demonstrates that the lack of significant effect for Factor A at level  $B_1$  is attributable to the group of complex subjects. The  $A(BC_{12})$  effect, although less pronounced, is identical to the effects  $A(BC_{21})$  and  $A(BC_{22})$ . The F-test confirms this initial impression. The two-fold simple effect  $A(BC_{11})$  is not significant ( $F < 1$ ). However, the other three effects are significant at  $p < .10$  and  $p < .05$   $\{F_{BC_{12}} = 2.77; F_{BC_{21}} = 4.32; F_{BC_{22}} = 3.12; F_{.90}(2; 48) = 2.31$  and  $F_{.95}(2; 48) = 3.19\}$ .

Hypothesis 6  $\{\bar{A}_1(C_1) > \bar{A}_1(C_2)\}$  is rejected because the differences are not significant. In terms of tendencies, the hypothesis would find support only in the five-alternative contract zone, since in the nine-alternative zone the reverse trend appears.

Hypothesis 7  $\{\bar{A}_2(C_1) = \bar{A}_1(C_1)\}$  is confirmed, since the numbers of agreements reached by the complex subjects with mediation and for both contract zones are rigorously equal to those reached with bilateral negotiation. As for Hypothesis 8,  $\{\bar{A}_2(C_2) > \bar{A}_1(C_2)\}$ , this is rejected in both contract zones because the differences are not significant. The tendency goes in the predicted direction, however, i.e., an increase in the number of agreements reached by the simple subjects with mediation. The fact that this hypothesis is not confirmed in a significant manner weakens the confirmation of Hypothesis 7.

Hypothesis 9  $\{\bar{A}_3(C_2) \geq \bar{A}_3(C_1)\}$  seems to be confirmed at the simple effects level, because both simple and complex subjects reach similarly few agreements (.350 and .380). Given the BC interaction, however, the same is not the case at the two-fold simple level. As Figure 3 shows, the equality in the numbers of agreements reached by the two-groups of subjects is due to the fact that in the five-alternative contract zone  $B_1$  the complex subjects reach more agreements (.53) than the simple subjects (.30), whereas in the nine-alternative contract zone the simple subjects reach more agreements (.40) than the complex subjects (.23). Moreover, observation has relatively uniform effects on the simple subjects, while for the complex subjects its effect depends on the situation, among other things.

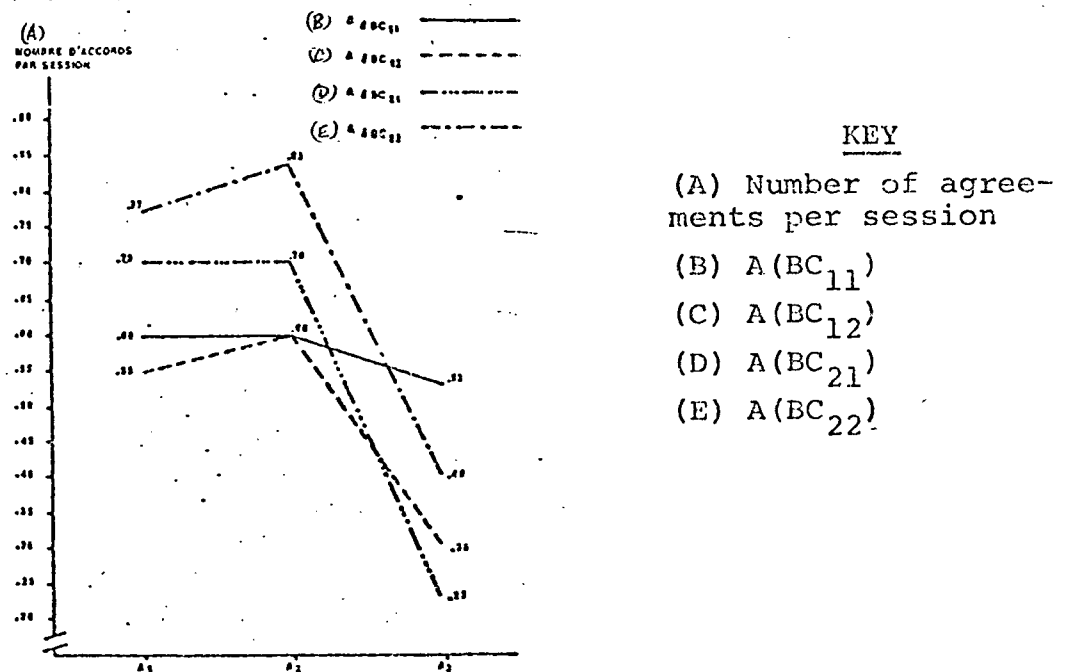


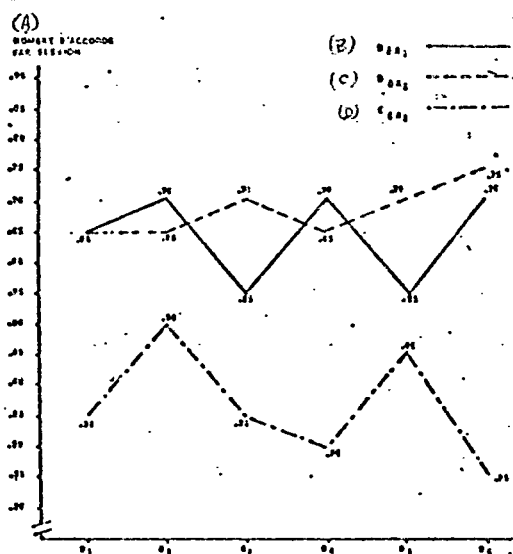
Figure 3 Numbers of agreements. Effects of Factor A at four combinations of levels of Factors B and C.

In relation to mediation and on complex subjects, observation has no effect in the five-alternative contract zone:

the difference  $\bar{A}_2(BC_{11}) - \bar{A}_3(BC_{11})$  is not significant, while in the nine-alternative contract zone, its effect is rather pronounced: the difference  $\bar{A}_2(BC_{21}) - \bar{A}_3(BC_{21})$  is significant at the  $p < .05$  level  $\{q=3.59; q_{.95}(3;48) = 3.42\}$ . For simple subjects and in the five-alternative contract zone, the difference  $\bar{A}_2(BC_{12}) - \bar{A}_3(BC_{12})$  is not significant at  $p < .05$  ( $q=2.29$ ), but the difference  $\bar{A}_2(BC_{22}) - \bar{A}_3(BC_{22})$  approaches the level of significance of  $p=.05$   $\{q=3.28; q_{.95}(3;48)=3.42\}$ . It is worth noting, however, that in both contract zones the tendency is the same, i.e. a rather noticeable reduction in the number of agreements.

Observation thus has no significant effect except in the most favorable contract zone, where the effect is identical for the two groups of subjects. At the tendency level, what seems to be going on, however, is that the complex subjects are less disturbed in a difficult situation by the presence of the observer than are the simple subjects, but conversely are more so than the latter in an easier situation.

Hypothesis 10, postulating the absence of learning during bilateral negotiation, is confirmed. As shown in Figure 4, there is no tendency toward an increase or a reduction in the number of agreements during the course of the sessions. The mean of the first three sessions does not differ substantially from the mean of the last three (.633 and .650). The simple effect  $D(A_1)$  is significant at  $p < .05$   $\{F=2.61; F_{.95}(5;240)=2.26\}$ , and this simply means that there are significant fluctuations in the numbers of agreements from session to session; they are clear in Figure 4. Since the simple effect  $D(A_2)$  is not significant at  $p < .10$  ( $F < 1$ ) and the mean of the first three sessions does not differ much from the mean of the last three (.667 and .700), the only effect of mediation lies precisely in suppressing these fluctuations in the number of agreements observed in bilateral negotiation and in observation ( $F=1.14$ ).



KEY

(A) Number of agree-  
ments per session

(B)  $D(A_1)$

(C)  $D(A_2)$

(D)  $D(A_3)$

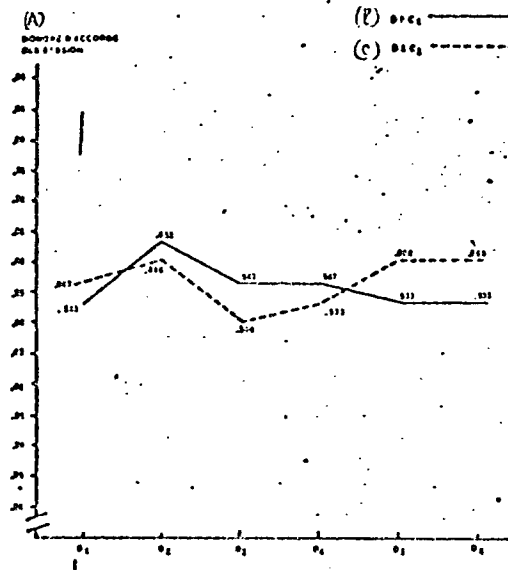
Figure 4 Number of agreements. Effects of Factor D at three levels of Factor A.

Hypothesis 11, postulating an increase in the number of agreements during the sessions with observation, is rejected. There even seems to be a slight reduction trend in the number of agreement through time: the mean of the first three sessions is .40 and that of the last three is .33. This difference is largest with observation. The reduction in the social facilitation effect through time is thus not observed in terms of numbers of agreements reached.

Hypothesis 12, postulating for mediation an increase in the number of agreements over the sessions is also rejected, since the simple effect  $D(A_2)$  is not significant at  $p=.10$ . Nevertheless, in the last three sessions, there is a tendency toward an increase in the number of agreements.

Hypothesis 13, postulating an increase in the number of agreements over the sessions that is larger with complex subjects than with the simple subjects, is rejected. The two groups of subjects do not differ substantially, as shown by Figure 5. Comparison between the mean of the first three sessions and that of the last three shows that the complex subjects

conclude more agreements (.578) in the earlier sessions than do the simple subjects (.556) and that the reverse is the case in the later sessions: .544 for the complex subjects and .578 for the simple subjects.



KEY  
 (A) Number of agreements per session  
 (B)  $D(C_1)$   
 (C)  $D(C_2)$

Figure 5 Number of agreements. Effects of Factor D at two levels of Factor C.

The analysis of variance shows also that the BD interaction is significant at the  $p < .10$  level. This interaction means that in five sessions out of six, the effects of Factor D are opposite in each of the contract zones, i.e., the number of agreements reached in one session in one of the zones increases whereas it decreases in the corresponding session of the other contract zone.

In terms of "end difference," the results on the whole confirm those obtained in terms of number of agreements reached. The three negotiation conditions have a significant effect and interact with the contract zones. Thus, in the most favorable contract zone, mediation does not reduce the end difference as compared to bilateral negotiation. Observation, on the other hand, strongly increases the end difference in comparison with both bilateral negotiation and mediation. In

the less favorable contract zone, observation has practically no effect compared to mediation. As for mediation, it has no effect on the complex subjects but tends to reduce the end difference with simple subjects.

Insofar as concerns Hypotheses 10, 11 and 12, this measure supplies interesting complementary information. Table V gives the means of this measure for each level of the different factors, and Table VI analyses their variance. It will be noted that the BD interaction, apparent in agreement numbers, does not appear in terms of end differences.

$\bar{A}_1 = 11,42$	$\bar{B}_1 = 12,28$	$\bar{C}_1 = 13,75$	$\bar{D}_1 = 15,83$	$\bar{D}_2 = 11,67$
$\bar{A}_2 = 7,50$	$\bar{B}_2 = 15,14$	$\bar{C}_2 = 13,67$	$\bar{D}_3 = 13,42$	$\bar{D}_4 = 13,33$
$\bar{A}_3 = 22,21$			$\bar{D}_5 = 15,25$	$\bar{D}_6 = 12,75$

TABLE V

Mean of the per session end difference for each session of the four factors.

(( Trans. note: The original should probably read "...for each level of the four factors."))

(A) SOURCES DE VARIATION	(E) df	(C) M.S.	F
(D) — Entre sujets :			
A (modes de : négociation)	2	6.962,71	3,27**
B (zones de contrats)	1	736,74	
C (complexité cognitive)	1	0,63	
AB	2	5,413,82	2,54*
AC	2	1.080,63	
BC	1	1.755,62	
ABC	2	1.298,13	
Erreur (entre)	48	2.127,94	
(E) — Intra sujets :			
D (séquence des sessions)	5	146,46	
AD	10	314,79	
BD	5	456,57	
CD	5	338,46	
ABD	10	459,90	
ACD	10	437,20	
BCD	5	634,79	1,54 (n.s.)
ABCD	10	467,04	
Erreur (intra)	240	412,53	

\*\* :  $p < .01$

\* :  $p < .05$

· :  $p < .10$

(n.s.) : non significatif

# KEY

(A) Sources of variation

(B) df (C) MS

(D) Between subjects:  
A (negotiation modes)  
B (contract zones)  
C (cognitive complexity)  
:  
:  
Error (between)

(E) Within subjects:  
D (sequence of sessions)  
:  
:  
Error (within)

(F) n.s.: not significant

TABLE VI

Analysis of variance for the end difference.

Factor D (the sequence of sessions) has no significant principal effect. Figure 6 illustrates the evolution of the end difference over the six sessions in each of the negotiating conditions. With bilateral negotiation, the end difference tends to increase during the course of the sessions ( $F < 1$ ), with mediation it tends to stay the same ( $F < 1$ ), and with observation it tends to decrease ( $F = 1.44$ ;  $F_{.90}(5; 240) = 1.88$ ). Thus, no simple effect is significant.

As was the case in agreement terms, Hypothesis 10, concerning non-learning during bilateral negotiation, is confirmed, since there is no significant variation and since, moreover, the trend goes in the direction of deterioration, a point that does not appear from the agreements reached treatment.

Although the simple effect  $D(A_3)$  is not significant, Hypothesis 11 predicts the observation of a reduction in the end

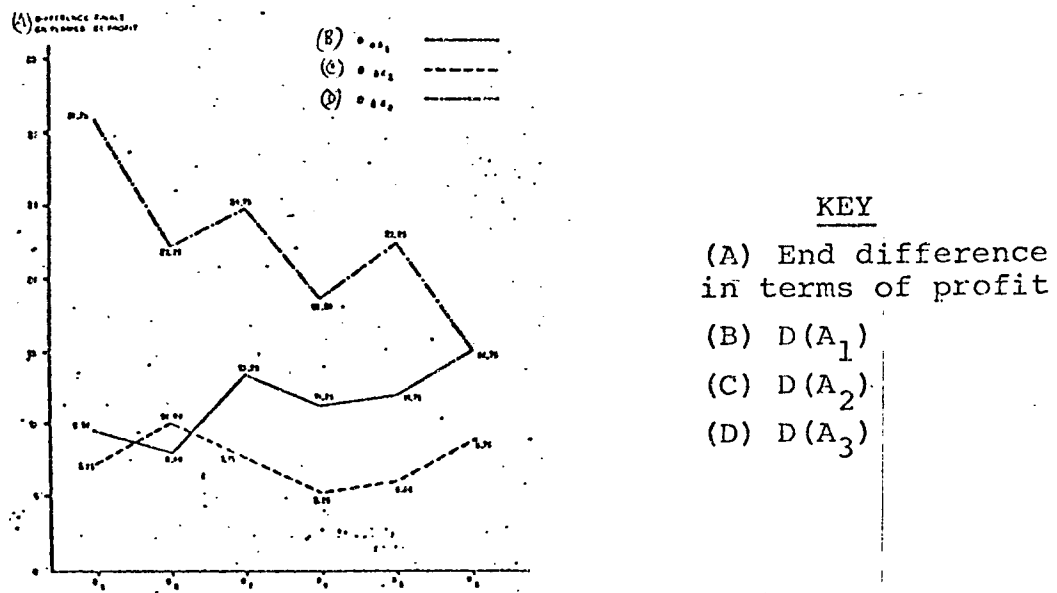


Figure 6 End difference. Effects of Factor D at three levels of Factor A.

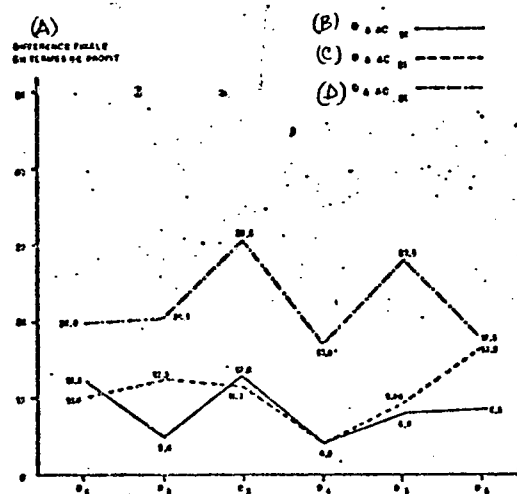
difference during the course of the sessions, and this is confirmed (it is not confirmed in agreements terms) by the contrast having the form  $5\bar{D}_1 + 3\bar{D}_2 + \bar{D}_3 - \bar{D}_4 - 3\bar{D}_5 - 5\bar{D}_6$ , which is significant at  $p < .05$   $\{F = 5.15; F_{.95}(1; 240) = 3.89\}$  (Cf. B. J. Winer, 1962, p.69). The inverse contrast in the case of bilateral negotiation gives no significant result ( $F < 1$ ).

Hypothesis 12, which foresees a reduction in the end difference over the sessions with mediation, is rejected (as was the case in agreement terms) because there was no significant variation. At the trend level, however, it should be noted that although there is no reduction in the end difference compared to bilateral negotiation (where there is a tendency toward increase), the absence of deterioration with mediation constitutes a positive effect, even though the difference between the last session in each condition ( $14.75 - 8.75$ ) is not significant ( $F < 1$ ).

Analysis of the "two-fold simple" effects  $\{D(AC_{ik})\}$  brings out important nuances. The first thing to be noted is that the general appearance of the curves in Figure 6 only appears

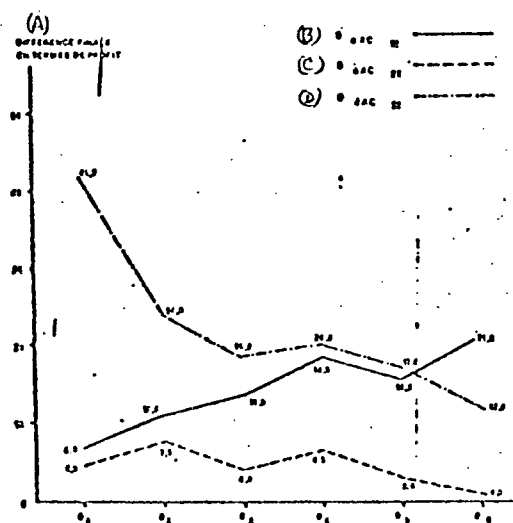


with the simple subjects and not with the complex subjects, who are characterized rather by fluctuations from session to session around a horizontal axis, especially with observation. This is illustrated in Figure 7 for complex subjects and in Figure 8 for simple subjects (\*).



KEY  
 (A) End difference  
 in terms of profit  
 (B)  $D(AC_{11})$   
 (C)  $D(AC_{21})$   
 (D)  $D(AC_{31})$

Figure 7 End difference. Effects of Factor D at three combinations of levels of Factors  $A_n$  and  $C_1$ .



KEY  
 (A) End difference  
 in terms of profit  
 (B)  $D(AC_{12})$   
 (C)  $D(AC_{22})$   
 (D)  $D(AC_{32})$

Figure 8 End difference. Effects of Factor D at three combinations of Factors  $A_n$  and  $C_2$ .

(\*) The end difference scale increment along the ordinate is two units in Figures 7 and 8, whereas it is only one unit in Figure 6.

None of the two-fold simple effects for the complex subjects  $\{D(AC_{m1})\}$  is significant ( $F < 1$ ). For the simple subjects the effect  $D(AC_{32})$  is significant at  $p < .05$   $\{F = 2.53; F_{.95}(5; 240) = 2.26\}$ . The effects  $D(AC_{12})$  and  $D(AC_{22})$  are not significant ( $F < 1$ ), but the contrast  $5\bar{D}_6 + 3\bar{D}_5 + \bar{D}_4 - \bar{D}_3 - 3\bar{D}_2 - 5\bar{D}_1$  for  $D(AC_{12})$  is significant at  $p < .10$   $\{F = 2.85; F_{.90}(1; 240) = 2.71\}$ . Moreover, the difference between  $D_6(AC_{12})$  and  $D_6(AC_{22})$   $(21.0 - 1.0)$  is significant at  $p < .05$   $\{F = 4.85; F_{.95}(1; 240) = 3.89\}$ .

Thus, for simple subjects in bilateral negotiation, the end difference increases significantly (in terms of the contrast) during the course of the sessions. With mediation, the end difference remains constant, and with observation it declines significantly. In connection with Hypothesis 10 (non-learning in bilateral negotiation), not only is there no learning, there is deterioration in the relationship. Given this deterioration, mediation allows learning in the sense that it prevents the end positions of the partners from pulling away from each other. In this sense and only for simple subjects, Hypothesis 12 is confirmed. As for Hypothesis 11, which postulates a reduction in the social facilitation effect over time, it is only confirmed for the simple subjects. The analysis of "three-fold simple" effects  $D(ABC_{ijk})$  seems to indicate that with complex subjects the social facilitation effect, as well as being reduced over time, appears later. This temporal offsetting is more apparent in the nine-alternative contract zone than in the five-alternative one.

Note:

The correlation between the number of agreements reached and the end difference is  $-.58$  for the whole of the original experimental design (150 cells,  $N = 750$ ). The correlations calculated for each session separately are respectively  $-.66$  in  $D_1$ ,  $-.58$  in  $D_2$ ,  $-.54$  in  $D_3$ ,  $-.60$  in  $D_4$ ,  $-.53$  in  $D_5$  and  $-.57$  in  $D_6$  ( $n = 125/\text{session}$ ).

The correlations for the six sessions in each of the 12 experimental groups analysed ( $n = 30/\text{cell}$ ) are given in Table VII. It is to be noted that observation tends to reduce the correlation between these two variables.

		(A) NÉGO- CIATION BILATÉRALE $A_1$	(B) MÉDIATION $A_2$	(C) OBSERVATION $A_3$
(D) Zone de contrats à 5 alternatives $B_1$	(E) Ss. complexes $C_1$ . . .	-.73	-.71	-.57
	(F) Ss. simples $C_2$ . . . .	-.67	-.75	-.43
(G) Zone de contrats à 9 alternatives $B_2$	(E) Ss. complexes $C_1$ . . .	-.69	-.83	-.56
	(F) Ss. simples $C_2$ . . . .	-.80	-.75	-.56

TABLE VII

Correlations between number of agreements reached and end difference ( $n = 30$ ).

KEY:

- (A) Bilateral negotiation  $A_1$
- (B) Mediation  $A_2$
- (C) Observation  $A_3$
- (D) Five-alternative contract zone  $B_1$
- (E) Complex subjects  $C_1$
- (F) Simple subjects  $C_2$
- (G) Nine-alternative contract zone  $B_2$

DISCUSSION

1. Bilateral negotiation:

With bilateral negotiation, complex subjects tend to reach more agreements in the five-alternative contract zone than do simple subjects, but less in the nine-alternative contract

zone. The same tendency is observed in terms of "end difference."

In the situation where there are few rational possibilities for agreement and where they are not very profitable, the complex subjects reach more agreements than the simple subjects. Conversely, in the situation where there are more possibilities for more profitable agreements, the simple subjects reach more of them than do the complex subjects.

It thus appears that in the difficult situation the relations between simple subjects have a tendency to deteriorate, a tendency which does not appear with the complex subjects and which brings to mind the phenomenon of "autistic hostility" (Newcomb, 1947) and "circular process" of relation deterioration (Pruitt, 1965).

The differences are not great, but considering the manner in which the two groups were set up (see above), the tendency is interesting. These differences in behavior are relatable to the corresponding differences in levels of aspiration. The simple subjects in the five-alternative contract zone have maximum and minimum aspiration levels that are higher than those of the complex subjects, whereas in the nine-alternative contract zone, the complex subjects have higher aspiration levels than the simple subjects (\*). This seems to indicate that the complex subjects have a more realistic perception of the situation in the sense that they try to realize a greater profit in the situation that permits it, whereas the simple subjects try to get the most profit in the least favorable situation. The fact of desiring less in a situation where they could get more probably facilitates the conclu-

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(\*) The level of maximum aspiration is the profit that the subject hopes to realize in the session he is beginning, while the minimum aspiration level is the minimum profit or the maximum loss that he is ready to accept in order to come to an agreement. Before each session, the subjects indicated their aspiration levels on a form. These measures supply an indication of the subjects' expectations and of the manner in which he perceives the situation.

sion of agreements among the simple subjects. Moreover, this would explain how, from one contract zone to the next, these subjects improve their performance more noticeably than do the complex subjects.

## 2. Mediation:

Mediation has no effect on the complex subjects but tends to slightly increase the number of agreements reached by the simple subjects. This can be partly explained by the characteristics of the cognitively simple subjects as given by Ware & Harvey (1967, p. 39). For simple subjects, the mediator would be an authority figure upon which they would depend more than would the complex subjects as a "conduct and opinion guide." Moreover, the agreement proposals of the mediator would furnish them with a means of quickly resolving the conflict and thus reducing the situation's ambiguity. This could produce two opposite effects: either the mediator's proposal is accepted and the agreement reached or else it is rejected because of not procuring a high enough profit, and non-agreement is then the case. These are two means of reducing the ambiguity of the situation quickly. In other terms, mediation would not be very different for the complex subjects from bilateral negotiation and would only be one more element in the situation, one which they integrate into a whole and in respect to which they retain a certain independance, whereas for simple subjects mediation would transform the situation and would supply an indication to be followed or not followed, but one which is not the object of interpretation and integration.

There nevertheless remains the fact that mediation does not have a very notable effect, contrary to what had been expected. In order to explain this weak influence of mediation, we must consider the fact that the mediation involved here is reduced to a minimum and that the proposals of the mediator rather often supply contradictory information. Thus, it is not impossible that if the two proposals of the mediator

had contained each time either the equilibrium point or the mid point between the partners' current positions, then mediation would have been a greater influence. But that was not the object of this study, which sought as much as possible to test only the influence of the triadic transformation of the conflict relation. Within that perspective and compared to bilateral negotiation, this transformation of the relationship does not seem to be enough to favor the reaching of agreements.

Lacking sufficient information to reply to these questions, new research is necessary in which various types of mediation would be tested so as to determine the factors that favor the reaching of agreements. The experimental situations would have to be more complex (for example of the type used by H. H. Kelley, 1966) and their degrees of complexity better known. The different types of mediation might consist, for example, of mediation without agreement proposals, so as to study the effect of the pure triadic transformation (it may be that the mere fact of introducing the third party as "the mediator" or as "the observer" is enough to bring about opposite effects); or other possibilities: mediation with one or more agreement proposals, mediation proposing the equilibrium points or the best points between the positions, a situation where the mediator is visible or not visible and where the communications are oral or written, mediation which takes place only when the subjects are at an impasse, etc.

### 3. Observation:

Observation brings about a strong reduction in the number of agreements, a reduction which is more pronounced in the nine-alternative contract zone than in the five-alternative zone and less noticeable among complex subjects in this last situation. A tendency seems to be observable in terms of "end differences." The social facilitation hypothesis seems thus to be verified in the sense that the presence of a third party

in a conflict situation between two persons has the effect of deteriorating the relationship, similar to the dominant response ("errors") reinforcement effect provoked by the presence of an audience in an individual learning situation. Since earlier studies on social facilitation compare learning in a social situation (audience or co-action) with individual learning, i.e. in a non-social situation where the subject is isolated, the effect of the observer on the relations between two persons in conflict can be considered as a second degree social facilitation effect, since the effect of the audience is compared with two other situations (bilateral negotiation and mediation) which are already social situations.

The fact that the social facilitation effect, is, on the one hand, more pronounced in the nine-alternative contract zone and, on the other hand, the performance of complex subjects is inferior to that of simple subjects (although they have a performance superior to the latter in the five-alternative contract zone) is rather hard to explain with the information available. Possibly in the case where numerous agreement possibilities exist, i.e. where the individual interests can be the greatest and the most divergent, observation may have the effect of stimulating latent and dominant competitive behavior more strongly, to the detriment of the common interest and the search for an agreement. On the other hand, in a less favorable situation, the competitive behavior, while equally stimulated, would have less influence since the individual interests do not have the material possibility of being as marked and divergent.

In other words, in the presence of an observer the possibility of gaining greater profits would excite the competitive spirit of the subjects and would lead them to run greater risks of failure through higher demands. They would thus lose sight of the common interest. On the other hand, where profit possibilities are not so large, the subjects would be careful

to avoid overly large losses and by this very fact more careful about the common interest. This phenomenon as a whole would seem to be truer for complex subjects--where the tendencies are more marked--than for the simple subjects.

A possible explanation of the fact that in the nine-alternative contract zone the complex subjects have worse performances than the simple subjects could be that in this relatively simple and easy situation--further simplified by the presence of the observer--their interest is stimulated more by the competition than by the attraction of a larger profit. The fact that in the five-alternative contract zone the complex subjects are less affected by the observer's presence may be accidental, but if it is not it suggests that these subjects, unlike the simple subjects, are capable of abstracting the observer when the situation demands it or if it is rather difficult or challenging by itself.

Finally, if mediation does not have any effect on the number of agreements reached relative to bilateral negotiation, it should be noted that compared to observation it has a very positive effect. This shows that these two modes of introducing a third person into a negotiation have different and opposite effects on the bargaining process. It is also to be noted that a certain number of social psychology experiments in gaming (particularly those using the Prisoner's Dilemma) are conducted in the presence of the experimenter and that this presence, depending on whether it is perceived by the subjects as that of a friendly and helping person (mediator) or that of a person alien and outside of the situation (observer) (Shapiro & Leiderman, 1967), could have opposite effects on the behavior of the subjects in the conflict situation.

#### 4. The sequence of sessions:

From one session to the next, variations in the number of agreements reached are more pronounced in bilateral negotiation



and in observation than in mediation, where there is practically no variation and where there appears a very slight tendency toward an increase in the number of agreements in the final sessions. In terms of agreements, no learning has taken place, and the only effect of mediation would be that the subjects behave in a more consistent manner through the sessions. The explanation for this could be that the subjects feel less free to behave as they wish in the presence of the mediator. This would be the equivalent on the behavioral level of the feeling of lack of freedom felt by the subjects in the research conducted by D. G. Pruitt:

"... I have not found any interaction between time pressure and mediation, in their effect on behavior. I did find a second order interaction in some questionnaire data, which is quite interesting. Under most conditions, people feel less freedom of action in the mediation condition than in the no mediation condition. This apparently reflects their feeling that the mediator is influencing their behavior. However, when time pressure is high and mediation comes late (i.e., a deadlock has set in), people apparently see themselves as free (sic) in the mediation than in the no mediation condition. Somehow, when there are pressures to give in and to hold out, the mediator is seen as providing greater freedom to the individual. Perhaps, as we hypothesized in The Hague, under such conditions the mediator becomes a scapegoat on whom the blame for concession can be totally thrown." (Letter, Buffalo, N. Y., 9 October 1967).

In genuine negotiation, the fact that the positions of the parties do not change abruptly from one session to the next can be considered as a positive element, in the sense that these abrupt changes can produce similar extreme reactions in the partners, which in the long run would reduce the chances of reaching an agreement. This stabilization and moderation effect that mediation produces is interesting, but it needs to be confirmed by further research.

The overall average tendencies in the evolution of the end difference in the course of the sessions are toward an increase with bilateral negotiation (mainly attributable to the simple subjects), a stability of end difference with mediation, and a sizable reduction with observation.

In terms of end difference ( and not in terms of agreements), the hypothesis of the reduction of the social facilitation effect over time is thus verified in a very clear way in the simple subjects and in a more pronounced manner for the nine-alternative zone. With complex subjects, this reduction in the social facilitation effect appears with a lag--after a strong increase in the first three sessions--in the five-alternative contract zone, where there also seems to appear a delayed tendency toward increase. This is rather similar to the deterioration of relations between simple subjects in bilateral negotiation.

## CONCLUSIONS

This study generally shows that the three negotiating conditions have different effects on performances, effects which are functions of the situations and partially also of the levels of cognitive complexity of the subjects. Moreover, these performances evolve in the course of the sessions in a manner that is relatively specific for each of the negotiating conditions and for the degree of cognitive complexity of the subjects.

With bilateral negotiation, the cognitively complex subjects have better performances than the cognitively simple subjects in the most difficult situation, but they are not as good in the simplest situation. The effect of mediation is weak, and the small effect that it has relative to bilateral negotiation consists of a slight improvement in the performances of only the simple subjects in the two situations. The presence of an observer produces a sharp deterioration in the performances, one which is most pronounced in the most favorable situation.

In this situation, the cognitively complex subjects generally have worse performances than the cognitively simple subjects, whereas they have better ones in the less favorable situation.

Thus, the two forms of triadic transformation of the conflict relationship have opposite effects, depending on whether mediation, even reduced to the minimum, or the mere presence of an observer is involved.

From an overall point of view, it seems that the three negotiating conditions affect the cognitively simple subjects in a more uniform and unequivocal manner than the cognitively complex subjects. It seems that the introduction of a third party into a negotiation modifies the structure of the relations between the different variables considered, and this effect is much more noticeable in complex subjects than in simple subjects. This could mean that for the complex subjects a given behavior has a meaning that varies as a function of the context in which it is situated, while for the simple subjects the same behavior keeps one and the same meaning no matter what the context in which it occurs.

(English summary)

(Spanish summary)

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